NOTE XLI.

ON SOME SPECIES OF THE GENUS PALAEMON FABR. WITH DESCRIPTIONS OF TWO NEW FORMS.

BY

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May 1879.

Palaemon carcinus Fabr.

Milne Edwards, Hist. natur. des crust. t. II, p. 395. — Von Martens, Ueber einige Ost-asiatische Süsswasserthiere, in "Archiv für Naturgeschichte," 1868, p. 34.

There are specimens of this beautiful species in the Museum collection from Siam, Java, Celebes (Makassar) and Borneo. Always, *at every age*, the first pair of legs are longer than the scale of the external antennae: in very large adult specimens they project with half of the wrist (carpopodite) beyond the antennal scale, in young and very young specimens only with the hands (chelipedes). In adult specimens the carpopodite of the second pair of legs is as long as the palm, but it is comparatively longer in young specimens. Thus in a young male specimen that has a length of 65 millimetres (the distance between tip of beak and end of terminal segment), the carpopodite of the second pair of legs measures 9 mm., the palm $4^1/_2$ mm., and the fingers $2^3/_4$ mm.; in a male specimen of the length of 120 mm., on the contrary, these

measures are respectively 17 mm., 13 mm., $10^1/_2$ mm., the difference between wrist and palm being already diminished, and in very large adult specimens the carpopodite and the palm have the same length.

Palaemon Lamarrei M. Edw.

Milne Edwards, Hist. Nat. t. II, p. 397. — De Haan, Fauna Japonica, Crustacea, p. 171.

According to De Haan this species lives also in Japan. — I have found in the collection of the Leyden Museum the type specimen, that has been described by De Haan as *Palaemon Lamarrei* M. Edw. A close examination of this species has led me to the conclusion, *that it is wholly identical* with a species from South-America, described by Heller under the name of *Palaemon Amazonicus*. (Sitzungsberichte Wien. Akad. Bd. XLV, 1862, p. 418, taf. II, fig. 45).

There are many specimens of this *Palaemon Amazonicus* Heller from Suriname in the Museum Collection, which species may be distinguished from the Indian *Palaemon carcinus* Fabr. by its much smaller size and more especially by the fact that the first pair of legs are scarcely as long as the scale of the external antennae (they are mostly somewhat shorter), that the second pair of legs are as long as the rostrum, and that nearly the third anterior part of the carpopodites of these legs projects beyond the scale of the external antennae. The teeth on the upper margin of the rostrum are also arranged somewhat otherwise in the American species than in *Pal. carcinus* Fabr.: in *Pal. Amazonicus* Heller there are 7—8 equidistant teeth on the posterior convex part, only the posterior tooth of which being placed behind the eyes; these teeth are separated by a great interval from the three or four anterior teeth which extend to the apex of the rostrum; in *Palaemon carcinus* Fabr., on

the contrary, there are 10 or 11 teeth on the posterior convex part of the rostrum, the *two* posterior teeth of which being always placed behind the eyes.

The *Palaemon Lamarrei* of De Haan (non Milne Edw.) is therefore identical with *Palaemon Amazonicus* Heller. This fact is the more inexplicable, because I have found the Suriname specimens of *Palaemon Amazonicus* Heller provided with the name of *Palaemon Dieperinkii* De Haan; so that I may conclude that the latter name has been given by de Haan to the American species This name, however which has never been published, should disappear from science and the species should henceforth bear the name of *Palaemon Amazonicus* Heller. But is seems to me very necessary that new researches confirm this pretended appearance of *Pal. Amazonicus* in Japan!

Palaemon Rosenbergii n. sp.

Length of the adult female 250 mm.; male unknown. — Rostrum slender, nowhere enlarged, reaching to the extremity of the scale of the external antennae; upper margin almost straight, not convex as in *Pal. carcinus* Fabr., curved upward a little toward apex, provided with 13 teeth, the nine posterior of which being equidistant and separated by a somewhat greater interval from the four anterior which extend to the apex; the three posterior teeth are placed upon the cephalothorax behind the eyes; lower margin with 10 strong equidistant teeth. Cephalothorax smooth; terminal segment of the abdomen not slender and acuminate as in *Palaemon carcinus* Fabr., but somewhat rounded at the end, its lateral margins converging in a much less degree than in the latter species. For the rest this form closely agrees with *Pal. carcinus* Fabr. — The first pair of legs project with half of the carpopodite beyond the scale of the external antennae, the carpopodite being longer than the arm and a little more than twice as long

as the hands; fingers somewhat shorter than palm. The second pair of legs are a little unequal in size, the right leg being the larger; they are shorter than the body, but they agree closely with those of *Pal. carcinus* Fabr.: carpopodite somewhat longer than the arm, thickened anteriorly and somewhat longer than the palm which is cylindrical and thicker than the thickest part of the wrist; fingers somewhat shorter than palm, close to one another and the curved points crossing one another; the moveable finger covered with coarse hairs except at the end, and armed with two very small teeth at its base, the immoveable finger with only one small tooth that projects between the two teeth of the other. The arm, and more especially the wrist and the hands, covered with numerous short small spines. The fifth pair of legs project with the terminal joint beyond the antennal scale, and are covered with extremely subtile spines.

The measures of the various joints of the larger leg of the second pair are as follow: arm 40 mm., wrist 52 mm., palm 45 mm., fingers 33 mm. A single specimen has been collected by the celebrated traveller Mr. von Rosenberg at Andaï in New-Guinea, to whom I have much pleasure in dedicating this new form, which may be distinguished from *Pal. carcinus* Fabr., the most nearly allied species, by the form and the structure of the rostrum and the terminal joint of the abdomen.

Palaemon ornatus Oliv.

Milne Edwards, Hist. Nat. t. II., p. 396. — von Martens, l. c. p. 36. *Palaemon vagus* Heller, Sitzungsber. Wiener Akad. 1862, p. 417, taf. II, fig. 42, 43. *Palaemon longimanus* Hoffmann, Crustacés de Madagascar etc., p. 34, pl. IX, fig. 68 and 69.

The Museum collection contains numerous specimens, of

every age, of this widely distributed species from Andaï (New-Guinea), Gebeh, Morotaï, Halmahera, Amboina, Ternate, Flores, Xulla-Bessy, Gorontalo (Celebes) and from the island of Réunion, besides two large specimens collected by Mr. Forsten in the Molluccas.

These specimens present some little differences and peculiarities, and therefore it will be useful, I believe, to give a description of each of them.

The largest specimen, a male, collected by Mr. Forsten in the Moluccas, has a length of 160 mm.; the second pair of legs are equal in size, being 250 mm. long of which the arm has 52 mm., the wrist 45 mm., the palm 75 mm., and the fingers 45 mm.; the fingers are armed with the typical teeth (one tooth on the moveable finger and two teeth on the immoveable), and are much curved, especially anteriorly. The rostrum projects beyond the end of the peduncle of the internal antennae, but it is shorter than the scale of the external antennae, and $\frac{8}{3}$ dentate.

There are nine specimens from the island of Xulla-Bessy in the collection; in these specimens the rostrum is as long as, or a little longer than the peduncle of the internal antennae. A male having the length of 92 mm., has the legs of the second pair almost equal in form and longer than the body, for they are 120 mm. and 105 mm. long respectively, the two fingers of both legs being armed with the ordinary teeth. Another male, on the contrary, 100 mm. long, has the legs of the second pair very unequal in size, the larger 140 mm. with curved fingers and strong teeth, the smaller one 90 mm. with closely-united fingers which are armed only with extremely subtile teeth. In a young female of the length of 68 mm., the second pair of legs are 43 mm. long, the fingers being as long as the wrist and shorter than the palm. — The single specimen from Gebeh is a young female of the length of 78 mm.; the rostrum reaches to the end of the peduncle of the internal antennae, being $\frac{7}{3}$ dentate; the

second pair of legs are 50 mm. long, the arm measuring 11½ mm., the wrist 10 mm., the palm 11 mm., and the closely united fingers 9 mm.

In the eight specimens from Halmahera, collected by Bernstein, the rostrum is $\frac{7-9}{2-3}$ dentate, in some shorter, in others rather longer than the peduncle of the internal antennae. In a male of a length of 87 mm., the second pair of legs are unequal, being respectively 108 mm. and 90 mm. long, and the fingers of both legs are toothed. A female, 90 mm. in length, has the second pair of legs equal in size, measuring 60 mm., the fingers without teeth and closely united to one another, arm 12½ mm., wrist 10½ mm., palm 12 mm. and fingers 11½ mm.

The rostrum is $\frac{7-8}{3}$ dentate, and reaches beyond the peduncle of the internal antennae in the four young female specimens, collected at Amboina.

Likewise appears the rostrum in the young female, caught at Andaï, bearing 8 teeth on the upper margin and 3 on the inferior.

Two males were collected at the island of Ternate: the larger specimen having a length of 95 mm., has the second pair of legs rather equal in size, 120 mm. and 115 mm. long respectively with widely curved and typically toothed fingers, the arm measuring 24 mm., wrist 21 mm., the palm 37 mm. and the fingers nearly 24 mm. In the younger specimen, on the contrary, 75 mm. long, the second pair of legs are rather equal, 65 mm. long, and the well-toothed fingers are rather little curved, the arm measuring 14 mm., the wrist 13½ mm., the palm 18 mm. and the fingers 7½ mm.

The rostrum is $\frac{8}{3}$ dentate in the male, collected at the island of Flores, and reaches to the end of the peduncle of the internal antennae.

A female specimen 105 mm. in length, from the bay of

Gorontalo (Celebes), has the rostrum $\frac{1}{3}$ dentate, reaching beyond the peduncle of the internal antennae, and the second pair of legs are rather unequal, being 85 mm. and 75 mm. long respectively.

The Leyden collection contains 7 middle-sized specimens from the island of Morotaï, which present some remarkable differences in the shape of the second pair of legs. They belong positively to the form, described by Mr. Heller as a proper species under the name of *Palaemon vagus* Heller; the rostrum is $\frac{1-2}{2-3}$ dentate and reaches to the end or rather a little beyond the end of the peduncle of the internal antennae. The second pair of legs are slender both in the male and in the female, and they are thinner than in the typical specimens of *Pal. ornatus*; they are equal or a little unequal in the male, and the fingers which are toothed but closely united to one another, are rather shorter than the palm and somewhat longer than the wrist. Likewise in the female. — Thus a male of the length of 90 mm. has the second pair of legs equal in size, being 75 mm. long, the arm measuring 15 mm., the carpopodite 13 mm., the palm 16 mm., and the fingers 15 mm. Another male specimen, 100 mm. long, presents the legs of the second pair unequal in size and more slender, being 90 mm. and 65 mm. long respectively, and of the larger leg the arm measures 19 mm., the wrist 17 mm., the palm 21 mm. and the fingers 17 mm. A female specimen 100 mm. long has the legs of the second pair equal in size, the length being 80 mm., the arm measuring 17 mm., the wrist 14 mm., the palm 19 mm. and the fingers 16 mm. These Morotaï specimens however closely agree for the rest with the typical *Pal. ornatus*, except in the remarkable differences of the second pair of legs, so that I conclude with Mr. von Martens this form to be only an interesting variety of *Pal. ornatus* Oliv., perhaps even a local variety.

There are finally several specimens of a *Palaemon*, col-

lected by Mrs. Pollen and van Dam in the island of Réunion, which belong positively to the species, called *Palaemon ornatus* Oliv: these specimens however have been described and figured by Mr. Hoffmann (l. c.) under the new name of *Palaemon longimanus* Hoffm.: *it is however quite impossible for me to find any specific difference between these specimens and the typical examples of Pal. ornatus* Oliv. *from the Moluccas.* Thus the rostrum, being $\frac{7-9}{2-3}$ dentate, is in most specimens rather shorter than the peduncle of the internal antennae, in some individuals however it reaches to the end of this peduncle, and it agrees closely in its form with the rostrum of *Pal. ornatus* Oliv. The specimens present also a complete resemblance in all other regards with the Indian species. Hoffmann has given the measures of the largest male specimen, and the figures of its second pair of legs: the largest female specimen that has a length of 105 mm., has the second pair of legs equal in size, being 75 mm. long, the arm measuring 15 mm., the wrist 13 mm., the palm 16 mm., and the fingers 14 mm.; in a very young female specimen 63 mm. long, the second pair of legs are also equal in size, measuring 35 mm., while the arm has a length of $7^1/_2$ mm., carpopodite of $6^1/_2$ mm., palm of 7 mm. and fingers of 6 mm.

Palaemon ornatus Oliv. accordingly has a wide geographical range, being found in Tahiti (Heller), New-Zealand (Heller), New-Guinea (Andaï, von Rosenberg), Halmahera, Morotaï, Amboina, Celebes, Ternate, Flores, Adonare, Waigeoei (Milne Edwards), Xulla-Bessy, Gebeh, the Philippines (von Martens) and also at the island of Réunion, a very wide range for a fresh-water form. As we have seen, this species however presents some varieties, individual and local, not only as regards the relative length of the rostrum with respect to the peduncle of the internal antennae, or the antennal scale and the number of

teeth $\binom{6-10}{2-4}$, but especially in the variable shape of the second pair of legs. But the palm of these legs is always at every age longer than the wrist or the fingers.

Palaemon mayottensis Hoffm.

Hoffman, Crustacés de Madagascar, p. 32, pl. IX, fig. 61 and 62.

Nine specimens of this interesting form have been collected by Mrs. Pollen and van Dam at the island of Mayotte, situated west of Madagascar. By comparing these specimens with those of the island of Réunion, identified by me with *Palaemon ornatus* Oliv., as well as with Indian examples of the latter species, I have been led to the conclusion *that the Pal. mayottensis* Hoffm. *too should be considered only as a local variety of Pal. ornatus* Oliv. The only essential difference is that in *Pal. mayottensis* Hoffm. the whole legs of the second pair are always *shorter* in proportion to the length of the body than in the typical specimens of *Pal. ornatus* Oliv., but the proportions of the measures of the various joints of these legs are quite the same in *Pal. mayottensis* Hoffm. as in *Pal. ornatus* Oliv. Thus, in the largest male specimen, of which Hoffmann makes mention, that has a length of 125 mm., the second pair of legs are only 120 mm. long; but they are much longer in a specimen of *Pal. ornatus* Oliv. of the same size. In a male of the length of 70 mm., these legs measure 50 mm.; in a female of 100 mm. they attain the length of 65 mm. The rostrum reaches to the end of the peduncle of the internal antennae, or is somewhat longer in other individuals; it is armed with 8—9 teeth on the upper, and with two or three on the inferior margin.

Palaemon Reunionnensis Hoffm.

Hoffmann, Crustac. de Madagascar, p. 33, pl. IX, fig. 66 and 67. *Palaemon equidens* Heller, l. c. p. 418, taf. II, fig. 44.

Twelve specimens of this species have been collected at the island of Réunion by Mrs. Pollen and van Dam.

This species which has been identified by Heller with *Pal. equidens* Dana, this author having received it from Mauritius, is closely allied to *Pal. ornatus* Oliv., which latter species is also found at the island of Réunion, though being quite different from *Pal. Reunionnensis*.

The slender rostrum always reaches beyond the end of the peduncle of the internal antennae, sometimes even to the apex of the scale of the external antennae, and extends more backward so that in most individuals there are three teeth placed upon the cephalothorax behind the eyes; upper margin with 8—10 teeth, inferior margin 3—4 toothed; the upper margin extends straightly, being a little convex above the eyes and slightly ascending toward the apex. The first pair of legs reach a little beyond the end of the rostrum, the second pair of legs are very elongated, slender and equal in size. (Mr. Hoffmann says erroneously that the carpopodite of the second pair of legs is *longer* than the palm, for even the contrary takes places, the *palm* being longer than the carpopodite, and so it is represented in the figure). In a male specimen 130 mm. long, the second pair of legs measure 155 mm.; the arm, extending beyond the scale of the external antennae, has a length of 34 mm., the carpopodite of 33 mm., the slender palm of 44 mm. and the toothed and closely united fingers of 25 mm.

In a male of a length of 105 mm., the second pair of legs measure only 82 mm., the arm reaches no more to the end of the antennal scale, and has a length of 18 mm.,

the wrist is 17 mm., the palm 20 mm. and the fingers 14 mm. The carpopodite is accordingly somewhat shorter than the arm and the palm, but always longer than the fingers which are never so widely curved as in *Pal. ornatus* Oliv.

Palaemon Japonicus de Haan.

De Haan, Fauna Japonica, Crustacea, p. 172. — von Martens, l. c. pag. 43.

This species presents some resemblance to the Indian *Pal. ornatus* Oliv., but may be distinguished by the shape of the rostrum, four or five of its teeth forming a longitudinal series, posterior to the eyes, and by the form of the second pair of legs: the arms being comparatively shorter and thicker, the hands more depressed and the fingers too comparatively shorter.

It may also be distinguished from *Pal. brevicarpus* de Haan by the shape of the rostrum and the structure of the second pair of legs: these species are quite different from one another.

I may be allowed to add the measures of a young male specimen of *Pal. Japonicus* De Haan, only 65 mm. in length; the left leg of the second pair is already somewhat greater than the right one, and is 46 mm. long, the arm measuring $8^1/_2$ mm., the wrist 9 mm., the palm 13 mm., and the fingers 7 mm.

Palaemon nipponensis De Haan.

De Haan, Fauna Japonica, Crustacea, p. 171. — *Palaemon Sinensis* Heller, Novara-Reise, p. 119, taf. X, fig. 11. — von Martens, l. c. p. 42.

The length of the rostrum of this species is very variable, reaching in some specimens to the end of the peduncle

of the internal antennae, in others to the apex of the antennal scale; the last tooth (on the cephalothorax) is situated at a greater distance from the preceding which extend all along the upper margin which is not curved upward. The second pair of legs are equal in size and are longer than the body in adult specimens, but shorter in the young. — In a male of a length of 100 mm., they measure 125 mm., the arm being 23 mm. long, the wrist 35 mm., the palm 26 mm., and the hairy fingers 22 mm. — Another male, measuring 75 mm., has the second pair of legs 70 mm. long, the arm measuring 14 mm., the carpopodite 19 mm., the palm 15 mm., and the fingers 10 mm. In a female, of a length of 77 mm., (I have found the female specimens together with the males in the same jar, though they were unknown to de Haan) the second pair of legs measure 50 mm., the arm $9^1/_2$ mm., the wrist $13^1/_2$ mm., the palm $9^1/_2$ mm., the fingers $6^1/_2$ mm. — In the male the inner margins of the fingers of the second pair of legs are provided at every age with innumerable stiff hairs, and with a very small tooth at the base; in the female these stiff hairs are less numerous and more scattered. In the adult male of the length of 100 mm., the arms of the second pair of legs extend beyond the scale of the external antennae, but in specimens of 75 mm. they are shorter than the antennal scale, especially in the female. In some individuals the surface of the cephalothorax is a little granulated, but in other specimens it is quite smooth.

Palaemon Sinensis Heller belongs positively to this species, being a young specimen of it; the description of that species, given by Heller and von Martens, agrees entirely with that of young individuals of *Pal. nipponensis* De Haan. *Pal. nipponensis* De Haan may be distinguished from *Pal. longipes* De Haan by the more numerous teeth on the rostrum and by the second pair of legs being shorter and otherwise shaped.

Palaemon longipes De Haan.

De Haan, Fauna Japonica, Crustacea, p. 171.

This species is positively closely allied to *Pal. Idae* Heller. (Sitzungsber. Wien. Akad. Bd. 45. p. 416, taf. II, fig. 40, 41 and von Martens, l. c. pag. 39). Unluckily there are no typical examples of *Pal. Idae* Heller in the Leyden collection, at least no adult specimens, so that it is quite impossible for me to discover the real differences of these species, if they are not identical. The rostrum of *Pal. longipes* De Haan reaches to or beyond the end of the peduncle of the internal antennae and is $\frac{10}{2-3}$ dentate; the last tooth of the upper margin is situated at a somewhat greater distance from the preceding which extend closely along the upper margin towards the apex. The surface of the cephalothorax is granulated. In a male specimen of a length of 85 mm., the larger leg of the second pair measures 160 mm., being twice as long as the body, the arm being 28 mm., the carpopodite 47 mm., the palm 40 mm., and the fingers 23 mm. — The hands are a little spotted, and the fingers are provided with small teeth at their bases, the moveable finger having two teeth, the immoveable only one.

I may be allowed to add that also *Pal. Alphonsianus* Hoffm. (Crustacés de Madagascar, p. 33, pl. IX) will probably prove to be identical with *Pal. Idae* Heller; but I have not found the authentic specimens of this species in the collection; however, according to Mr. von Hilgendorf (Baron von der Decken's Reise p. 102) *Pal. Idae* Heller is also found at Zanzibar.

Palaemon macrobrachion Herklots.

Herklots, Additam: ad Faun. Afric. Occid. p. 15.

This species inhabits the western coast of Africa, and is

allied to *Pal. Idae* Heller. The surface of the cephalothorax is smooth; the two last teeth of the upper margin of the rostrum are situated upon the cephalothorax posterior to the eyes. The arm of the second pair of legs is cylindrical and thickened, the wrist thickened anteriorly is longer than the arm, and longer than the palm, the fingers are half as long as the palm in the adult male, closely united to one another, and covered with coarse hairs; the immoveable finger is provided with a very small tooth at its base.

In a male specimen that has a length of 110 mm., the larger leg of the second pair is 140 mm. long, the arm measuring 31 mm., the wrist 42 mm., the palm 32 mm., and the fingers 18 mm.

Pal. macrobrachion Herklots may be distinguished from the Japanese *Pal. longipes* de Haan by the slender rostrum, the upper margin being slightly convex, and curved upward towards the apex, the rostrum reaching to the end of the scale of the external antennae, by the second pair of legs being comparatively shorter, and by the closely united very hairy fingers.

Palaemon Vollenhovenii Herklots.

Herklots, Tijdschrift Nederl. Entomol. vereeniging, Deel I, p. 96.

Only the female of this species was known to Mr. Herklots; the Museum however has received some time ago an adult male and a still greater female of this species from the Congo coast, so that I have now been enabled to complete our knowledge of this form.

The fine male specimen has a length of 140 mm.; the cephalothorax is 70 mm. long and the rostrum measures 40 mm.; the rostrum is longer than the peduncle of the internal antennae, almost as long as the scale of the external antennae, $\frac{12}{4}$ toothed, the *four* last teeth on the

cephalothorax being posterior to the eyes. The outer foot-jaws are as long as the peduncle of the internal antennae. The first pair of legs are 70 mm. long, and project with the greater half of the wrist beyond the antennal scale. The second pair of legs are a little unequal, the left being the larger one, and they measure 195 mm. and 155 mm. respectively; the arm of the larger leg projects a little beyond the antennal scale, measuring 35 mm., the carpopodite 32 mm., the nearly cylindrical palm 62 mm. and the fingers 45 mm. — The fingers are somewhat curved, the tips crossing one another; the moveable finger is provided with a strong tooth somewhat behind the middle, and with three much smaller teeth behind the latter at its base, the interior tooth being a little larger; the immoveable finger is also armed with a large tooth at the base and a smaller one behind the latter. — The whole leg is covered with numerous small spines which are somewhat stronger at the inferior margin of the various joints; the fingers, especially the immoveable one, are a little hairy at their bases. — The third pair of legs are somewhat longer than the antennal scale, but the fifth pair do not reach to the tip of these scales.

The female specimen is 130 mm. long, the cephalothorax measuring 60 mm.; the rostrum is $\frac{12}{5}$ dentate and shorter than the antennal scale. The second pair of legs are equal, much feebler than those of the male, 115 mm. long, consequently somewhat shorter than the body; the arm is as long as the peduncle of the internal antennae and has a length of 22 mm., the carpopodite measuring 20 mm., the palm 28 mm., and the closely united fingers 24 mm.; the fingers have no teeth, the tips crossing one another.

Pal. Vollenhovenii Herklots is the representative of the American *Pal. Jamaïcensis* Herbst on the western coast of Africa and nearly allied to that species. But it is a much more interesting fact *that the African species is also most closely allied to the Japanese Pal. brevicarpus* de Haan,

so that the females of both species (the Museum contains only female specimens of *Pal. brevicarpus*) may be distinguished almost exclusively by the different shape of the rostrum: the rostrum of the Japanese form is less straight, somewhat more convex upon the eyes, and always the *five* last teeth on the cephalothorax are posterior to the eyes; there are only 2 or 3 teeth on the inferior margin, which are situated more backward than in *Pal. Vollenhovenii*; the carpopodite of the second pair of legs is somewhat less slender, and the fingers are always a very little longer than the palm, while they are a very little shorter than the remaining part of the hand in the African species; for the rest these forms do not present other differences.

Palaemon Javanicus Heller.

Heller, Sitzungsber. Wien. Akad. Bd. 45. p. 421 taf. II, fig. 48. — von Martens, Archiv. für Naturgesch. 1868. p. 45.

The Museum is in possession of one well-preserved male specimen, collected by Mr. Semmelink at Bezoeki (Java), and of five specimens (1 ♂, 4 ♀) found by Mr. Bleeker at the same island.

These specimens, though all undoubtedly belonging to *Pal. Javanicus* Heller, present however some interesting individual differences, which it will be necessary to describe.

In the male specimen of Bezoeki, having a length of 85 mm., the rostrum is very slender, reaching a little beyond the scale of the external antennae, and $\frac{11}{3}$ toothed; the three posterior teeth are situated on the cephalothorax, and the first tooth is placed close to the apex, being separated from the preceding by a somewhat greater interval than the other ones. The legs of the second pair are

65 mm. and 50 mm. long respectively; of the larger leg the arm is measuring 14 mm., the wrist 15 mm. and the whole hand 27 mm., the palm which is compressed in proportion of 3:4, having a length of 18 mm. — The measures of the other leg are respectively: arm $11^1/_2$, wrist 12, hand 20 mm., of which 12 mm. for the palm. — According to the description of Mr. Heller (it may be allowed to say that the figure does not agree with the description), the carpopodite should be almost as long as the palm. The other legs do not reach the extremity of the scale of the external antennae.

The male specimen, collected by Mr. Bleeker, has a length of 75 mm.; the rostrum projects scarcely beyond the peduncle of the internal antennae, and is $\frac{9}{3}$ dentate; the two posterior teeth of the upper margin are placed on the cephalothorax, but the first tooth has the same situation as in the male of Bezoeki. The second pair of legs have a length of 60 and 46 mm. respectively; the measures of the larger leg are as follows: arm 13 mm., wrist 14 mm., whole hand 27 mm., the palm measuring 19 mm., the fingers being comparatively shorter than in the specimen of Bezoeki; the palm is also somewhat broader. The arm of the other leg measures $10^1/_2$ mm., the carpopodite $11^1/_2$ mm., the hand 19 mm., of which 12 mm. for the palm, the fingers being also a little shorter. In a female specimen, of a length of 65 mm., the second pair of legs measure 37 mm. and 31 mm.; the rostrum agrees entirely with that of the male specimen of the same locality. The arm of the larger leg measures 8 mm., the carpopodite also 8 mm., the hand 14 mm., and the palm 8 mm.; the measures of the small leg are respectively $6^1/_2$, 7, 10 and 6 mm.

The fingers are closely united to one another and are armed only in the larger leg with very rudimentary teeth.

Palaemon pilimanus n. sp.

A small species, more or less allied to *Pal. latimanus*

v. Mart. and *Pal. Javanicus* Heller, but sharply characterized.

Rostrum somewhat shorter than the peduncle of the internal antennae and descending a little towards apex; upper margin scarcely convex with 9—13 equal and equidistant teeth, the three or four last teeth being posterior to the eyes, and situated on the cephalothorax; inferior margin scarcely emarginate between the eyes, and provided with one or two feeble teeth; the rostrum is a little longer than half the length of the cephalothorax, and the apex is entire. — Cephalothorax smooth; the small hepatical spine situated not far from the antennal spine on the lateral surface. The terminal segment of the abdomen shorter than the lateral appendages; and provided with two pairs of small spines on its surface as usually. External maxillipedes comparatively very elongate, reaching beyond the peduncle of the external antennae, almost to the extremity of the scales. First pair of legs much longer than the scale of the external antennae; the arm reaches to the extremity of the outer foot-jaws, and therefore almost to the tip of the antennal scale; fingers covered with scattered hairs. Second pair of legs unequal, both in the male and in the female; in the adult male the larger leg (in some individuals the right, in others the left) is somewhat longer than the body. The arm cylindrical, thickened a little in the middle, and reaching almost to the extremity of the scale of the external antennae; carpopodite very short and thickened, almost as thick as long, and rather cubical in the larger leg, being half as long as the arm and the palm. Hands slender and depressed, though swollen a little at the base; palms broader than the carpopodites, everywhere equally broad and compressed in proportion of 7 : 9; the palm of the great hand is somewhat longer than the arm, and twice or more than twice as long as the short carpopodite; the fingers of the great hand are a little shorter than the palm, compressed a little, and closely united to one another; but the tips are curved,

crossing one another, and the whole length of the inner margins is armed with 13—15 blunt, almost equal and equidistant teeth. The fingers of the small hand are rather longer than the palm, also closely united to one another, and provided with a smaller number of similar teeth as in the great hand. The legs of the second pair appear to be smooth to the naked eye, but the outer surface of the arms, and also in some less degree of the other joints are covered with minute spines, only perceptible with a magnifying glass. The external surface of the palm, except a small portion at the base, and the external surface and the inner margins of the fingers, are covered with long coarse hairs both in the great and in the small hand. The internal surface of the various joints is smooth. In the female the second pair of legs are somewhat smaller than in the male, but they have the same shape and physiognomy. In young specimens of a length of 28 mm., the second pair of legs are already unequal in size and wholly resembling those of the adult animals. — The third pair of legs reaches to the end of the antennal scale, but the fifth pair does not project to the tip of that organ.

Seventy specimens of this fine species (of which only 10 or 12 are females) have been collected by Mr. Snelleman in the river of Alahan-Pandjang, and five more specimens at Moeara-Laboe, both localities of the interior of the island of Sumatra.

The largest male specimen has a length of 45 mm.; the second pair of legs measures respectively 52 mm. and 38 mm.; the arm of the larger leg measures 12 mm., the carpopodite 6 mm., the hand 28 mm., of which 14 mm. for the palm; the arm of the smaller leg is 9 mm. long, the carpopodite $4^1/_2$ mm., the hand $19^1/_2$ mm., and the palm 8 mm.

The second pair of legs of a female specimen of 36 mm. measures respectively 30 mm. and 22 mm.; the measures are respectively (when following the same order as for the male) of

the larger leg: 7, $3^1/_2$, $14^1/_2$, 7 mm., and of the smaller leg: 5, $2^1/_2$, $9^1/_2$, $4^1/_2$ mm.

I have found a (very rare) variety which is allied to the type by numerous transitions, in which the fingers of the hand of the larger leg of the second pair are a little *longer* than the palm, and also those of the smaller leg somewhat more elongated.

Leyden, May 1879.